

Amendments to the Claims

A complete list of pending claims follows:

1. (Currently Amended) A method of failover in a cluster having one or more cluster nodes, comprising:

providing a ~~second~~ server operative with said cluster, wherein said server is not a cluster node;

detecting a failed process on one of said cluster nodes; and

duplicating said process on a virtual node on said ~~second~~ server;

wherein said process is resumed on said virtual node.

2. (Currently Amended) The method of claim 1, wherein said ~~second~~ server is a failover server.

3. (Currently Amended) The method of claim 1, wherein said ~~second~~ server is a backup server.

4. (Currently Amended) A system comprising:
a cluster, said cluster composed of one or more cluster nodes, each of said cluster nodes constructed and arranged to execute at least one process; and

a ~~second~~ server, said ~~second~~ server operative with said cluster, said ~~second~~ server having one or more virtual nodes, each of said virtual nodes being constructed and arranged to execute said process of said one or more cluster nodes, wherein said server is not a cluster node;

wherein if one or more of said cluster nodes fails, then said process of said failed cluster node is transferred to one of said virtual nodes of said ~~second~~ server.

5. (Currently Amended) The system of claim 4, wherein said ~~second~~ server is a failover server.

6. (Currently Amended) The system of claim 4, wherein said ~~second~~ server is a backup server.

7. (Currently Amended) The system of claim 4 further comprising a ~~third~~ an additional server, said ~~third~~ additional server operative with said ~~second~~ server, said ~~third~~ additional server having one or more virtual nodes, each of said virtual nodes being constructed and arranged to execute the instructions of one or more virtual nodes of said ~~second~~ server, wherein said additional server is not a cluster node.

8. (Currently Amended) The system of claim 7, wherein said ~~second~~ server is a failover server and said ~~third~~ additional server is a backup server.

9. (Currently Amended) A system comprising:
a cluster, said cluster composed of one or more cluster nodes, each of said cluster nodes constructed and arranged to execute one or more processes;

a distributed cluster manager operative with each of said cluster nodes, said distributed cluster manager constructed and arranged to detect failure of said one or more processes on said one or more cluster nodes; and

a ~~second~~ server, said ~~second~~ server operative with said distributed cluster manager, said ~~second~~ server having a dynamic virtual failover layer operative with said distributed cluster manager, said ~~second~~ server further having one or more virtual nodes

operative with said dynamic virtual failover layer, each of said virtual nodes being constructed and arranged to execute said one or more processes of said one or more cluster nodes, wherein said server is not a cluster node;

wherein if one or more of said cluster nodes fails, then said one or more processes of said failed cluster node are transferred to one of said virtual nodes of said ~~second~~ server.

10. (Currently Amended) The system of claim 9 further comprising:

~~an ~~third~~ additional~~ server, said ~~third~~ additional server operative with said distributed cluster manager, said ~~third~~ additional server having a dynamic virtual failover layer operative with said distributed cluster manager, said ~~third~~ additional server further having one or more virtual nodes operative with said dynamic virtual failover layer of said ~~third~~ additional server, each of said virtual nodes of said ~~third~~ additional server being constructed and arranged to execute said one or more processes of said one or more cluster nodes, wherein said additional server is not a cluster node.

11. (Currently Amended) The system of claim 9, wherein said ~~second~~ server is a failover server.

12. (Currently Amended) The system of claim 10, wherein said ~~second~~ server is a failover server.

13. (Currently Amended) The system of claim 10, wherein said ~~third~~ additional server is a backup server.

14. (Currently Amended) An apparatus composed of one or more cluster nodes having at least one computer, said computer having at least one microprocessor and memory capable of executing one or more processes, said apparatus further comprising:

a ~~second~~ server, said ~~second~~ server operative with said cluster, said ~~second~~ server having one or more virtual nodes, each of said virtual nodes being constructed and arranged to execute said process of said one or more cluster nodes, wherein said server is not a cluster node;

wherein if one or more of said cluster nodes fails, then said process of said failed cluster node is transferred to one of said virtual nodes of said ~~second~~ server.

15. (Currently Amended) The apparatus of claim 14, wherein said ~~second~~ server is a failover server.

16. (Currently Amended) The apparatus of claim 14, wherein said ~~second~~ server is a backup server.

17. (Currently Amended) The apparatus of claim 14 further comprising a ~~third~~ an additional server, said ~~third~~ additional server operative with said ~~second~~ server, said ~~third~~ additional server having one or more virtual nodes, each of said virtual nodes being constructed and arranged to execute the instructions of one or more virtual nodes of said second server, wherein said additional server is not a cluster node.

18. (Currently Amended) The apparatus of claim 17, wherein said ~~second~~ server is a failover server and said ~~third~~ additional server is a backup server.

19. (Currently Amended) An apparatus having a cluster, said cluster composed of one or more cluster nodes, each of said cluster nodes having one or more microprocessors and memory, said nodes constructed and arranged to execute one or more processes, said apparatus further comprising:

a distributed cluster manager operative with each of said cluster nodes, said distributed cluster manager constructed and arranged to detect failure of said one or more processes on said one or more cluster nodes; and

a ~~second~~ server, said ~~second~~ server operative with said distributed cluster manager, said ~~second~~ server having a dynamic virtual failover layer operative with said distributed cluster manager, said ~~second~~ server further having one or more virtual nodes operative with said dynamic virtual failover layer, each of said virtual nodes being constructed and arranged to execute said one or more processes of said one or more cluster nodes, wherein said server is not a cluster node;

wherein if one or more of said cluster nodes fails, then said one or more processes of said failed cluster node are transferred to one of said virtual nodes of said ~~second~~ server.

20. (Currently Amended) The apparatus of claim 19 further comprising:

a ~~third~~ an additional server, said ~~third~~ additional server operative with said distributed cluster manager, said ~~third~~ additional server having a dynamic virtual failover layer operative with said distributed cluster manager, said ~~third~~ additional server further having one or more virtual nodes operative with said dynamic virtual failover layer of said ~~third~~ additional server, each of said virtual nodes of said ~~third~~ additional server being constructed and arranged to

execute said one or more processes of said one or more cluster nodes, wherein said additional server is not a cluster node.

21. (Currently Amended) The apparatus of claim 19, wherein said ~~second~~ server is a failover server.

22. (Currently Amended) The apparatus of claim 20, wherein said ~~second~~ server is a failover server.

23. (Currently Amended) The apparatus of claim 20, wherein said ~~third~~ additional server is a backup server.